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What is claimed is :

1. A data multiplexing network system including :
a wavelength division multiplexing network ;
5 a first wavelength multiplexing function unit for setting a plurality of different wavelengths which correspond to a plurality of different service classes, respectively, and for mapping each packet into each correspondent-wavelength which corresponds to each service class, to which said each packet belongs, and for multiplexing said correspondent-
10 wavelengths for said plurality of different service classes for a data transmission at a multiplexed-wavelength through said wavelength division multiplexing network ; and
a second wavelength multiplexing function unit for receiving said each correspondent-wavelength and for fetching a packet from said each
15 correspondent-wavelength.
2. The data multiplexing network system as claimed in claim 1, wherein said first wavelength multiplexing function unit further includes :
a plurality of ports for receiving a plurality of packets ;
20 a first packet interface unit for receiving said plurality of packets from said plurality of ports ;
a first service class specifying unit for receiving said plurality of packets from said first packet interface unit and for specifying each service class, to which each of said plurality of packets belongs ;

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a first wavelength mapping unit for receiving said plurality of packets from said first service class specifying unit and for mapping each of said plurality of packets at each correspondent-wavelength which corresponds to said each service class; and

5 a first wavelength division multiplexing network interface for receiving said correspondent-wavelengths from said first wavelength mapping unit and for multiplexing said correspondent-wavelengths.

3. The data multiplexing network system as claimed in claim 2,
10 wherein said second wavelength multiplexing function unit further includes :

a second wavelength division multiplexing network interface for demultiplexing a multiplexed wavelength transmitted through said wavelength division multiplexing network into said correspondent-
15 wavelengths ;

a second wavelength mapping unit for receiving said correspondent-wavelengths from said second wavelength division multiplexing network interface and for fetching said packets from said correspondent-wavelengths ;

20 a second service class specifying unit for receiving said packets from said second wavelength mapping unit and for specifying each output port for each of said packets, and for adding each output port information to said each packet ; and

a second packet interface unit for receiving said each packet with

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said each output port information and for sending said each packet to identified one of said plurality of ports, identified by said each output port information.

5 4. The data multiplexing network system as claimed in claim 3,
 wherein said first service class specifying unit adds said each
 output port information to said each packet, and
 wherein said second service class specifying unit also specifies
 said each output port based on said each output port information of said
10 each packet.

5. The data multiplexing network system as claimed in claim 3,
 wherein said second service class specifying unit also specifies said each
 output port based on each packet specifying information included in said
15 each packet.

6. The data multiplexing network system as claimed in claim 5,
 wherein said each packet specifying information comprises a packet header
 included in said each packet.

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7. The data multiplexing network system as claimed in claim 1,
 wherein said first packet interface unit adds each input port
 information to each of said plurality of packets as received from said
 plurality of ports, and said each input port information identifying each port,

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through which said each packet has been received,

wherein said first service class specifying unit further includes : a first service class-correspondent table for defining correspondences between said service classes and said plurality of ports, and

5 wherein said first service class specifying unit makes a retrieval with reference to said first service class-correspondent table, based on said each input port information, so as to specify, as said each service class, each service class corresponding to each port identified by said each input port information.

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8. The data multiplexing network system as claimed in claim 1, wherein each of said plurality of packets has a packet identifying information which identifies said each packet,

15 wherein said first service class specifying unit further includes : a second service class-correspondent table for defining correspondences between said service classes and said packet identifying informations, and

20 wherein said first service class specifying unit makes a retrieval with reference to said second service class-correspondent table, based on said each packet identifying information, so as to specify, as said each service class, each service class corresponding to said each packet identifying information.

9. The data multiplexing network system as claimed in claim 1, wherein said plurality of different service classes include a best effort class

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and a perfect band guarantee class.

10. The data multiplexing network system as claimed in claim 1,
wherein at least one of said first and second wavelength multiplexing
5 function units further includes a shaper for controlling packet traffics in a
plurality of wavelength bands.

11. A wavelength multiplexer including :
a first wavelength multiplexing function unit for setting a
10 plurality of different wavelengths which correspond to a plurality of
different service classes, respectively, and for mapping each packet into
each correspondent-wavelength which corresponds to each service class, to
which said each packet belongs, and for multiplexing said correspondent-
wavelengths for said plurality of different service classes for a data
15 transmission at a multiplexed-wavelength through said wavelength division
multiplexing network.

12. The wavelength multiplexer as claimed in claim 11, wherein said
first wavelength multiplexing function unit further includes :
20 a plurality of ports for receiving a plurality of packets ;
a first packet interface unit for receiving said plurality of packets
from said plurality of ports ;
a first service class specifying unit for receiving said plurality of
packets from said first packet interface unit and for specifying each service

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class, to which each of said plurality of packets belongs ;

a first wavelength mapping unit for receiving said plurality of packets from said first service class specifying unit and for mapping each of said plurality of packets at each correspondent-wavelength which
5 corresponds to said each service class; and

a first wavelength division multiplexing network interface for receiving said correspondent-wavelengths from said first wavelength mapping unit and for multiplexing said correspondent-wavelengths.

10 13. The wavelength multiplexer as claimed in claim 12, further including a second wavelength multiplexing function unit for receiving said each correspondent-wavelength and for fetching a packet from said each correspondent-wavelength.

15 14. The wavelength multiplexer as claimed in claim 13, wherein said second wavelength multiplexing function unit further includes :

a second wavelength division multiplexing network interface for demultiplexing a multiplexed wavelength transmitted through said wavelength division multiplexing network into said correspondent-
20 wavelengths ;

a second wavelength mapping unit for receiving said correspondent-wavelengths from said second wavelength division multiplexing network interface and for fetching said packets from said correspondent-wavelengths ;

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a second service class specifying unit for receiving said packets from said second wavelength mapping unit and for specifying each output port for each of said packets, and for adding each output port information to said each packet ; and

5 a second packet interface unit for receiving said each packet with said each output port information and for sending said each packet to identified one of said plurality of ports, identified by said each output port information.

10 15. The wavelength multiplexer as claimed in claim 14,
 wherein said first service class specifying unit adds said each output port information to said each packet, and
 wherein said second service class specifying unit also specifies
15 said each output port based on said each output port information of said
 each packet.

16. The wavelength multiplexer as claimed in claim 14, wherein said second service class specifying unit also specifies said each output port based on each packet specifying information included in said each packet.

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17. The wavelength multiplexer as claimed in claim 16, wherein said each packet specifying information comprises a packet header included in said each packet.

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18. The wavelength multiplexer as claimed in claim 11,
wherein said first packet interface unit adds each input port
information to each of said plurality of packets as received from said
plurality of ports, and said each input port information identifying each port,
5 through which said each packet has been received,

wherein said first service class specifying unit further includes : a
first service class-correspondent table for defining correspondences
between said service classes and said plurality of ports, and

wherein said first service class specifying unit makes a retrieval
10 with reference to said first service class-correspondent table, based on said
each input port information, so as to specify, as said each service class,
each service class corresponding to each port identified by said each input
port information.

15 19. The wavelength multiplexer as claimed in claim 11,
wherein each of said plurality of packets has a packet identifying
information which identifies said each packet,

wherein said first service class specifying unit further includes : a
second service class-correspondent table for defining correspondences
20 between said service classes and said packet identifying informations, and

wherein said first service class specifying unit makes a retrieval
with reference to said second service class-correspondent table, based on
said each packet identifying information, so as to specify, as said each
service class, each service class corresponding to said each packet

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identifying information.

20. The wavelength multiplexer as claimed in claim 11, wherein said plurality of different service classes include a best effort class and a perfect
5 band guarantee class.

21. The wavelength multiplexer as claimed in claim 11, wherein at least one of said first and second wavelength multiplexing function units further includes a shaper for controlling packet traffics in a plurality of
10 wavelength bands.

22. A data multiplexing transmission method including :
setting a plurality of different wavelengths which correspond to a plurality of different service classes, respectively ;
15 mapping each packet into each correspondent-wavelength which corresponds to each service class, to which said each packet belongs ; and
multiplexing said correspondent-wavelengths for said plurality of different service classes for a data transmission at a multiplexed-wavelength through said wavelength division multiplexing network.

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23. The data multiplexing transmission method as claimed in claim 22, further including :
receiving said each correspondent-wavelength ; and
fetching a packet from said each correspondent-wavelength.

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24. The data multiplexing transmission method as claimed in claim 23, further including the steps of :

5 demultiplexing a multiplexed wavelength transmitted through said wavelength division multiplexing network into said correspondent-wavelengths for fetching said packets from said correspondent-wavelengths ;

specifying each output port for each of said packets ;

adding each output port information to said each packet ; and

10 sending said each packet to identified one of said plurality of ports, identified by said each output port information.

25. The data multiplexing transmission method as claimed in claim 24,

15 wherein said each output port information is added to said each packet, and

wherein said each output port is specified based on said each output port information of said each packet.

20 26. The data multiplexing transmission method as claimed in claim 24, wherein said each output port is also specified based on each packet specifying information included in said each packet.

27. The data multiplexing transmission method as claimed in claim

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26, wherein said each packet specifying information comprises a packet header included in said each packet.

28. The data multiplexing transmission method as claimed in claim
5 22,

wherein each input port information is added to each of said plurality of packets as received from said plurality of ports, and said each input port information identifies each port, through which said each packet has been received, and

10 wherein a retrieval is made with reference to a first service class-correspondent table for defining correspondences between said service classes and said plurality of ports, based on said each input port information, so as to specify, as said each service class, each service class corresponding to each port identified by said each input port information.

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29. The data multiplexing transmission method as claimed in claim
22,

wherein each of said plurality of packets has a packet identifying information which identifies said each packet, and

20 wherein a retrieval is made with reference to a second service class-correspondent table defining correspondences between said service classes and said packet identifying informations, based on said each packet identifying information, so as to specify, as said each service class, each service class corresponding to said each packet identifying information.

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30. The data multiplexing transmission method as claimed in claim 22, wherein said plurality of different service classes include a best effort class and a perfect band guarantee class.

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